

CHICAGO
Electric[®]Power Tools
INDUSTRIAL

MOTOR - 1/4 HP

MOTOR - 1/3 HP

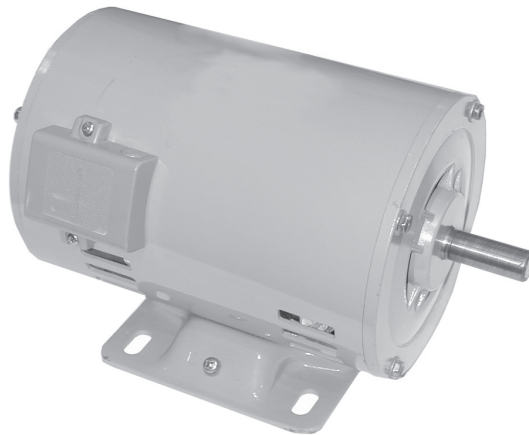
Model 92103

Model 92104

MOTOR - 1/2 HP

Model 92105

ASSEMBLY AND OPERATING INSTRUCTIONS



3491 MISSION OAKS BLVD., CAMARILLO, CA 93011
VISIT OUR WEB SITE AT [HTTP://WWW.HARBORFREIGHT.COM](http://www.harborfreight.com)

Copyright © 2004 by Harbor Freight Tools[®]. All rights reserved. No portion of this manual or any artwork contained herein may be reproduced in any shape or form without the express written consent of Harbor Freight Tools.

For technical questions and replacement parts, please call 1-800-444-3353

SPECIFICATIONS

Item	Description
Power Requirement	115 VAC, 60 Hz, single phase
Current Draw	92103: 4.37 amps (no load), 12.18 amps (peak) 92104: 5.17 amps (no load), 14 amps (peak) 92105: 5 amps (no load), 7.54 amps (peak)
Output Power	92103: ¼ HP; 92104: 1/3 HP; 92105: ½ HP
Shaft Diameter	92103: 9/16"; 92104: 9/16"; 92105: 5/8"
Rotation	Facing Shaft: Counterclockwise (reversible); 1725 RPM (max.)
Frame Type	92103: NEMA 44; 92103: NEMA 44; 92105: NEMA 48
Features	Four poles; Fan cooled; Centrifugal switch; 90105: Capacitor start
Overall Dimensions	92103/104: 11.5 (L) x 8.2 (W) x 8.2 (H) inches 92105: 12.5 (L) x 8.2 (W) x 8.2 (H) inches

SAVE THIS MANUAL

You will need the manual for the safety warnings and precautions, assembly instructions, operating and maintenance procedures, parts list and diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep the manual and invoice in a safe and dry place for future reference.

GENERAL SAFETY RULES



WARNING!

READ AND UNDERSTAND ALL INSTRUCTIONS. Failure to follow all instructions listed below may result in electric shock, fire, and/or serious injury.

SAVE THESE INSTRUCTIONS

Work Area

1. **Keep your work area clean and well lit.** Cluttered benches and dark areas invite accidents.
2. **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust.** Power tools create sparks which may ignite the dust or fumes.
3. **Keep bystanders, children, and visitors away while operating a power tool.**
Distractions can cause you to lose control. Protect others in the work area from debris such as chips and sparks. Provide barriers or shields as needed.

Electrical Safety

4. **Avoid body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerators.** There is an increased risk of electric shock if your body is grounded.
5. **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
6. **Grounded tools must be plugged into an outlet properly installed and grounded in accordance with all codes and ordinances. Never remove the grounding prong or modify the plug in any way. Do not use any adapter plugs. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded.** If the tools should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user.
7. **Double insulated tools are equipped with a polarized plug (one blade is wider than the other). This plug will fit in a polarized outlet only one way. If the plug does not fit fully in the outlet, reverse the plug. If it still does not fit, contact a qualified electrician to install a polarized outlet. Do not change the plug in any way.** Double insulation eliminates the need for the three wire grounded power cord and grounded power supply system.
8. **Do not abuse the Power Cord. Never use the Power Cord to carry the tools or pull the Plug from an outlet. Keep the Power Cord away from heat, oil, sharp edges, or moving parts. Replace damaged Power Cords immediately.** Damaged Power Cords increase the risk of electric shock.
9. **When operating a power tool outside, use an outdoor extension cord marked “W-A” or “W”.** These extension cords are rated for outdoor use, and reduce the risk of electric shock.

Personal Safety

10. **Stay alert. Watch what you are doing, and use common sense when operating a power tool. Do not use a power tool while tired or under the influence of drugs, alcohol, or medication.** A moment of inattention while operating power tools may result in serious personal injury.
11. **Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts.** Loose clothes, jewelry, or long hair can be caught in moving parts.
12. **Avoid accidental starting. Be sure the Power Switch is off before plugging in.** Carrying power tools with your finger on the Power Switch, or plugging in power tools with the Power Switch on, invites accidents.
13. **Remove adjusting keys or wrenches before turning the power tool on.** A wrench or a key that is left attached to a rotating part of the power tool may result in personal injury.

14. **Do not overreach. Keep proper footing and balance at all times.** Proper footing and balance enables better control of the power tool in unexpected situations.
15. **Use safety equipment. Always wear eye protection.** Dust mask, nonskid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.

Tool Use and Care

16. **Use clamps (not included) or other practical ways to secure and support the workpiece to a stable platform.** Holding the work by hand or against your body is unstable and may lead to loss of control.
17. **Do not force the tool. Use the correct tool for your application.** The correct tool will do the job better and safer at the rate for which it is designed.
18. **Do not use the power tool if the Power Switch does not turn it on or off.** Any tool that cannot be controlled with the Power Switch is dangerous and must be replaced.
19. **Disconnect the Power Cord Plug from the power source before making any adjustments, changing accessories, or storing the tool.** Such preventive safety measures reduce the risk of starting the tool accidentally.
20. **Store idle tools out of reach of children and other untrained persons.** Tools are dangerous in the hands of untrained users.
21. **Maintain tools with care. Keep cutting tools sharp and clean.** Properly maintained tools with a sharp cutting edge are less likely to bind and are easier to control. Do not use a damaged tool. Tag damaged tools “Do not use” until repaired.
22. **Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the tool’s operation. If damaged, have the tool serviced before using.** Many accidents are caused by poorly maintained tools.
23. **Use only accessories that are recommended by the manufacturer for your model.** Accessories that may be suitable for one tool may become hazardous when used on another tool.

Service

24. **Motor service must be performed only by qualified repair personnel.** Service or maintenance performed by unqualified personnel could result in a risk of injury.
25. **When servicing a tool, use only identical replacement parts. Follow instructions in the “*Inspection, Maintenance, And Cleaning*” section of this manual.** Use of unauthorized parts or failure to follow maintenance instructions may create a risk of electric shock or injury.

SPECIFIC SAFETY RULES FOR THIS PRODUCT

1. **Maintain labels and nameplates on the Motor.** These carry important information. If unreadable or missing, contact Harbor Freight Tools for a replacement.

2. **Always wear ANSI approved safety impact eye goggles and heavy work gloves when setting up and using the Motor.** Using personal safety devices reduce the risk for injury. Safety impact eye goggles and heavy work gloves are available from Harbor Freight Tools.
3. **Maintain a safe working environment.** Keep the work area well lit. Make sure there is adequate surrounding workspace. Always keep the work area free of obstructions, grease, oil, trash, and other debris. Do not use install the motor in areas near flammable chemicals, dusts, and vapors. Do not use this product in a damp or wet location.
4. **Avoid unintentional starting.** Make sure you are prepared to begin work before turning on the Motor.
5. **Do not force the Motor.** This tool will do the work better and safer at the speed and capacity for which it was designed.
6. **Always unplug the Motor from its electrical outlet (or turn off the circuit breaker and tag) before performing any inspection, maintenance, or cleaning procedures.**
7. **When installing motor, observe all national and local codes.** Make sure to install, protect, and fuse according to the latest issue of the National Electric Code, NEMA Standard Publication No. MG2, and local codes. Ground frames in accordance with NEC Article 430. For general grounding information, refer to NEC Article 250.
8. **Install guards when appropriate.** Make sure all moving parts, including the shaft and any attached accessories, are permanently guarded to prevent clothing and body parts from being caught.
9. **Disconnect power before working on motor driven equipment.**
10. **Before each use,** check all nuts, bolts, and screws for tightness. Vibration during operation may cause these to loosen.
11. Keep extension cord off the ground and away from water.
12. Always connect the Line Cord to a Ground Fault Circuit Interrupter (GFCI) protected electrical outlet.
13. Do not allow children to play with, or touch this product.
14. Keep the motor dry; never submerge in water. Keep the motor a safe distance from all flammable objects.

 **WARNING! People with pacemakers should consult their physician(s) before using this product. Operation of electrical equipment in close proximity to a heart pacemaker could cause interference or failure of the pacemaker.**

GROUNDING

⚠ WARNING!

Improperly connecting the grounding wire can result in the risk of electric shock. Check with a qualified electrician if you are in doubt as to whether the outlet is properly grounded. Do not modify the power cord plug provided with the tool or product. Never remove the grounding prong from the plug. Do not use the tool if the power cord or plug is damaged. If damaged, have it repaired by a service facility before use. If the plug will not fit the outlet, have a proper outlet installed by a qualified electrician.

Grounded Tools: Tools with Three Prong Plugs

1. Tools marked with “Grounding Required” have a three wire cord and three prong grounding plug. The plug must be connected to a properly grounded outlet. If the tool should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from the user, reducing the risk of electric shock. (See Figure A.)
2. The grounding prong in the plug is connected through the green wire inside the cord to the grounding system in the tool. The green wire in the cord must be the only wire connected to the tool’s grounding system and must never be attached to an electrically “live” terminal. (See Figure A.)
3. Your tool must be plugged into an appropriate outlet, properly installed and grounded in accordance with all codes and ordinances. The plug and outlet should look like those in the following illustration. (See Figure A.)

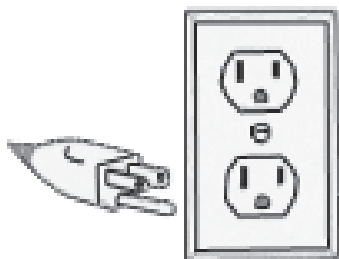


Figure A

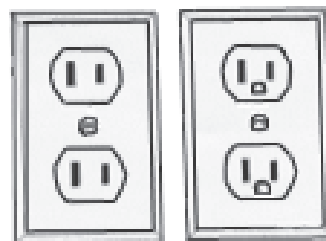


Figure B

Double Insulated Tools: Tools with Two Prong Plugs

4. Tools marked “Double Insulated” do not require grounding. They have a special double insulation system which satisfies OSHA requirements and complies with the applicable standards of Underwriters Laboratories, Inc., the Canadian Standard Association, and the National Electrical Code. (See Figure B.)
5. Double insulated tools may be used in either of the 120 volt outlets shown in the following illustration. (See Figure B.)

EXTENSION CORDS

1. Grounded tools require a three wire extension cord. Double Insulated tools can use either a two or three wire extension cord.
2. As the distance from the supply outlet increases, you must use a heavier gauge extension cord. Using extension cords with inadequately sized wire causes a serious drop in voltage, resulting in loss of power and possible tool damage. (See Table A.)
3. The smaller the gauge number of the wire, the greater the capacity of the cord. For example, a 14 gauge cord can carry a higher current than a 16 gauge cord. (See Table A.)
4. When using more than one extension cord to make up the total length, make sure each cord contains at least the minimum wire size required. (See Table A.)
5. If you are using one extension cord for more than one tool, add the nameplate amperes and use the sum to determine the required minimum cord size. (See Table A.)
6. If you are using an extension cord outdoors, make sure it is marked with the suffix “W-A” (“W” in Canada) to indicate it is acceptable for outdoor use.
7. Make sure your extension cord is properly wired and in good electrical condition. Always replace a damaged extension cord or have it repaired by a qualified electrician before using it.
8. Protect your extension cords from sharp objects, excessive heat, and damp or wet areas.







Table A

RECOMMENDED MINIMUM WIRE GAUGE FOR EXTENSION CORDS* (120 VOLT)					
NAMEPLATE AMPERES (At Full Load)	EXTENSION CORD LENGTH				
	25 Feet	50 Feet	75 Feet	100 Feet	150 Feet
0 – 2.0	18	18	18	18	16
2.1 – 3.4	18	18	18	16	14
3.5 – 5.0	18	18	16	14	12
5.1 – 7.0	18	16	14	12	12
7.1 – 12.0	16	14	12	10	-
12.1 – 16.0	14	12	10	-	-
16.1 – 20.0	12	10	-	-	-

* Based on limiting the line voltage drop to five volts at 150% of the rated amperes.

SYMBOLOLOGY

Table B

	Double Insulated
	Canadian Standards Association
	Underwriters Laboratories, Inc.
	Volts Alternating Current
	Amperes
	No Load Revolutions per Minute (RPM)

UNPACKING

When unpacking, check to make sure that all the parts are included. If any parts are missing or broken, please call Harbor Freight Tools at the number on the cover of this manual as soon as possible.

INSTALLATION

WARNING: Electrical shock hazard. The wiring of the motor to the facility power circuit must be done by a qualified electrician.

General

1. The ambient air temperature where the motor is to be installed cannot exceed 104° F. If it does, cooling must be provided to ensure the temperature stays below the limit.
2. Do not block motor air vents.
3. This motor should be installed indoors in a clean, dry, and noncorrosive environment where no flammable liquids or gases are present.
4. When mounting the motor for use, make sure all mounting hardware is securely fastened. Make sure all hardware (not supplied) is securely fastened.
5. When mounting a pulley (not included) to the drive shaft, make sure it is properly aligned or motor life will be significantly shortened.
6. Never operate motor without installing a safety guard (not supplied), with at least a two inch clearance, around all pulleys and belts driven by this motor.

Motor Wire Connections

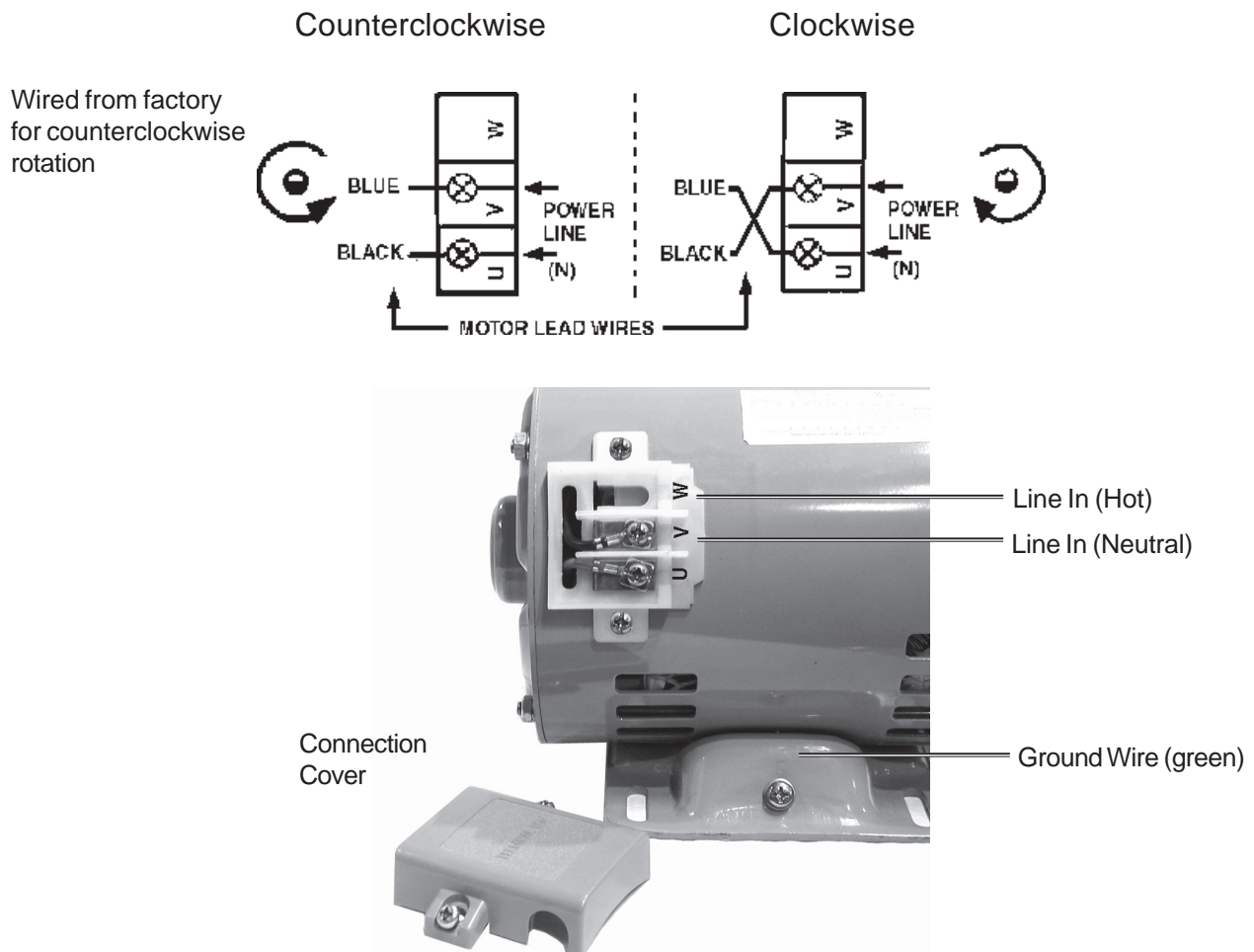
The table below, and the photo on the next page, indicate the proper wiring connections for the motor internal wires and the external power connections (neutral power wire is usually white; hot power wire is usually black, ground wire (green) is for earth ground).

1. Remove Connection Cover to expose the terminal strip (see photo below).
2. Verify that there is no power to the circuit to be connected. Check fuse box and turn off circuit breaker.
3. Using approved National Electrical Code electrical standards, make the connections as described in the table below for 115 VAC operation only.

Reverse the blue and black leads for clockwise rotation. **Note:** As there are tap connections under the electrical block, do not reverse the line conductors. The facility power circuit, and connecting wires, must be rated at least 20 amps of current. Use wire lugs (not included) to connect the wires to the Motor terminal strip. The motor can be connected by an appropriate size line cord (not included) or hard wired through conduit.

4. Replace motor Connection Cover.

Caution: Always connect the green grounding wire to the green motor chassis screw. Failure to connect this wire properly can create a severe safety hazard.



OPERATING INSTRUCTIONS

Before initial operation, verify that:

1. The Motor is dry.
2. The voltage and frequency stamped on motor and control nameplates correspond with that of the input power line.
3. All connections to the motor are correct.
4. The rotor turns freely when disconnected from the load.
5. The motor is detached from the load for the initial start. Operate the motor without a load for about one hour to test for any localized heating in bearings and windings.
6. The voltage is correct and balanced at the motor terminals, and no-load current draw (in amps) is correct.
7. The motor comes up to its operational speed and is not being overloaded.

INSPECTION, MAINTENANCE, AND CLEANING

 **WARNING! Make sure the Power Switch of the Motor is in its “OFF” position and that the tool is unplugged or disconnected from its electrical outlet before performing any inspection, maintenance, or cleaning procedures.**

1. **Before each use**, inspect the general condition of the Motor. Check for loose screws, misalignment or binding of moving parts, cracked or broken parts, damaged electrical wiring, and any other condition that may affect its safe operation. If abnormal noise or vibration occurs, have the problem corrected before further use. **Do not use damaged equipment.**
2. Maintenance and repairs should only be done by a qualified technician.
3. Periodically recheck all nuts, bolts, and screws for tightness.
4. Store in a clean and dry location.

Lubrication

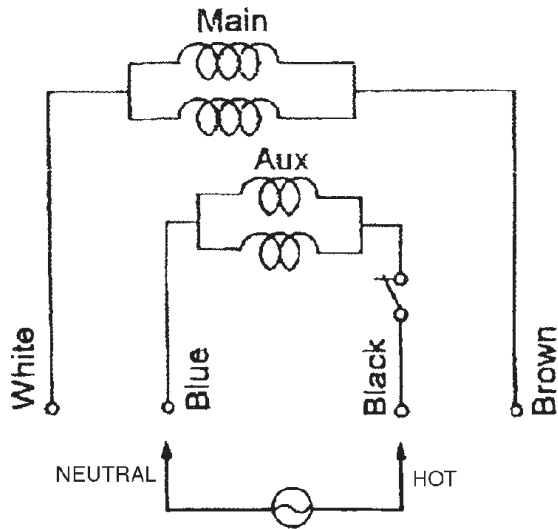
Note: If lubrication instructions are shown on motor, they will supersede this general instruction. Lubrication should be completed by a qualified technician.

1. The Motor is properly lubricated at the time of manufacture. It is not necessary to lubricate at time of installation unless the motor has been in storage for a period of 12 months or longer.
2. Re-oil sleeve bearings with drops of 5W20 viscosity motor oil every 2000 hours of normal service. Direct drive operation (no pulleys) requires lubrication every 3000 hours of normal service.
3. Sealed ball bearings require no attention during the life of the bearing.

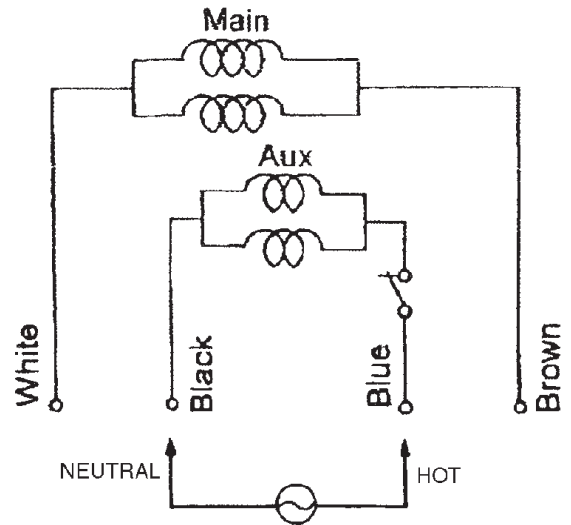
WIRING DIAGRAMS

92103/92104

CCW (SE)

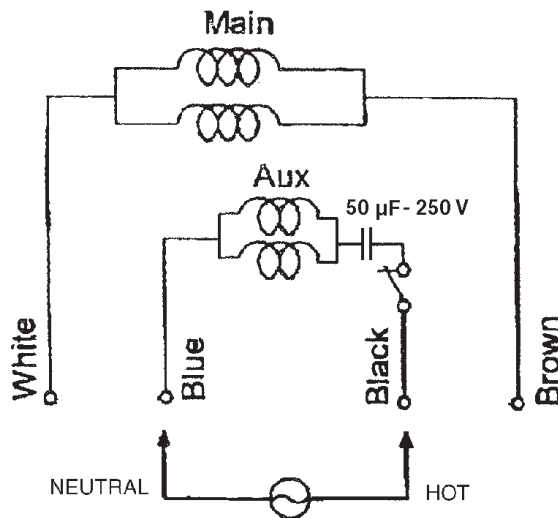


CW (SE)



92105

CCW (SE)



CW (SE)

